HYDROTHERAPY IN THE TREATMENT OF PNEUMONIA.*

By A. J. SANDERSON, M. D., San Francisco.

HYDROTHERAPY, in the treatment of chronic diseases and fevers, has been acknowledged to be a stable remedial measure, but its use in many acute diseases has not received the attention that it justly deserves. Its application in the treatment of pneumonia is in many respects quite unique. In no disease is it capable of producing more brilliant results. This may be explained because pneumonia is a disease that is usually well-defined, with a distinct clinical picture, and the effects of a course of treatment are accurately registered in respiration, pulse, and temperature.

In dealing with hydrotherapy in this disease, it is very essential that a course of treatment should be scientifically prescribed and carefully administered. The application requires exposures and manipulations, which, in the hands of an ignorant or careless nurse, are liable to give rise to complications; but when thoroughly and skilfully administered can be given without inconvenience to the patient, and with only good results. It is important that during a course of treatment the results should be carefully watched by the physician, or it should be in the hands of a nurse whom he knows to be fully competent. This will necessitate frequent visiting of the patient during the critical period of the disease, or the nurse must have had sufficient experience to understand when a change or discontinuance of a form of the treatment is indicated.

In general practice, one is often handicapped by not having appliances at hand for the administering of the proper treatment. This is best overcome by having the nurse possess the simple equipment, which need only be a few large flannel cloths, two hot water bags, three or four ice-bags. Cloths for compresses, and a woolen blanket, if needed, can always be found in the home. These, with plenty of hot and cold water, and a supply of ice, are all the appurtenances that are necessary.

No general prescription can be given for the treatment of pneumonia; each case must be studied by itself; and the treatment given as indicated, taking into consideration the general recuperative and resistive powers of the individual, as well as the existing disease. During the course of treatment, aside from sustaining the functions of the lungs and heart, there are three conditions to be combatted, viz., the extension of the inflammatory area, the engorgement of the lung tissue, and the accumulation of toxins. These indications are, to a great degree, met by diverting as much blood as possible to other parts of the body. If this can be accomplished, and the action of the skin and kidneys stimulated, much will be done to lessen the severity of the pneumonia and aid the crippled pulmonary functions.

If called to a case of pneumonia about the stage of the initial chill, and we have a strong, robust patient to deal with, it is best to give a full body pack. Augment the heat by placing hot-water bags outside the blankets about the extremities. Keep cool compress on the head, and if engorgment of the lung has already been sufficient to particularly depress respiration, keep a cold compress, or an ice compress, upon the chest while this treatment is being given. If possible, get the patient to perspire freely. The accomplishment of this will be greatly facilitated by having him drink a quantity of hot water. The favorable effects to be obtained are increased elimination of toxins, the diversion of the blood from the lungs to the extremities and the peripheral vessels. Following the pack, the patient should be placed, without exposure, into a warm bed, and local treatment to the chest continued.

If when called to the patient the pneumonia has reached a more advanced stage, or we have a feeble person to deal with, the effect of the above treatment can be largely obtained by giving a hot pack to each limb, with the hot-water bag to the spine; or, a less inconvenient method, with the patient lying on his back, and legs flexed at right angles, give a hot foot-bath beneath the bed covers, also with a hot bag to the spine. Such treatment can be continued twenty or thirty minutes, or until the desired effect is produced. When this treatment is properly administered, the patient should experience marked relief from the symptoms, and the respiration should become freer. Accompanying the above measures, begin the local treatment to the chest. This consists of cold applications, interrupted by the use of heat. In giving these, care should be taken not to expose the neck and shoulders. They should be covered by warm, dry flannel. Also have warm flannel with which to cover the chest, so as to exclude air while the compresses or applications are being renewed. Hot applications in the form of poultices or fomentations are commonly prescribed in our textbooks, but in the average case, cold applications will accomplish much more marked results. This has been successfully demonstrated by Dr. Mays, of Philadelphia, and others. When extreme cold is used, care should be exercised not to continue the applications too long, and they should be temporarily or permanently withheld when progressive improvement ceases.

I have found the most satisfactory results to come from the alternate hot and cold treatment. First thoroughly apply fomentations to the chest, changing as often as they become the least cooled,

* Read before the Medical Society of the State of California, at the annual meeting, held in San Francisco, April 14 to 17, 1902.

and continuing the application for twenty or twenty-five minutes. This should be followed by cold compress to the chest, which should remain during the interval between the fomentations, varying, according to the case, from one to three hours. If the temperature of the body is high, the compresses should be changed as fast as they become warm. If the pulmonary inflammation is especially active, it is well to apply ice compresses between the fomentations, in which case the latter may need to be repeated as often as every hour.

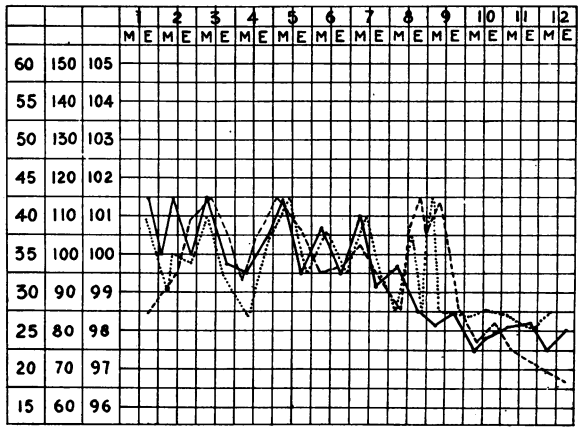
In some cases, and in some stages of the disease, the cold applications are not well borne, at which times it is my practice to cover the chest during the interval of hot applications with compresses of alcoholic solution of menthol. The cold applications are a good stimulant to the functions of the respiration, and the heart's action. I have seldom found it necessary to use any other means to stimulate these organs. They also have a marked effect in increasing local leukocytosis. This increase of oxygen by deeper respiration, and the increased number of leukocytes, are both powerful agents for combatting the disease.

For the reduction of the temperature, the use of alcohol rubs, cold sponges, cold mitten friction, with neutral and cold bowel irrigation, when thoroughly applied, will be found sufficient. Having the patient retain one or two pints of cool normal salt solution after the irrigation, for absorption, will have a favorable influence on the temperature, and by increasing the volume of the blood and stimulating the kidneys, will favorably affect the disease process. The severity, extent, and frequency of both the hot and cold treatments must be determined by the examination of each case, the general condition of the patient, and the clinical picture it presents. If the hot fomentations to the front of the chest are not sufficient to relieve the engorgment of the lung and the breathing, the effect can be augmented by the application of the hot bag, poultice, or another fomentation to the back of the chest, applied at the same time or alternately with it. I sometimes find it an advantage to have this application of heat to the back of the chest, while the cold or ice compress is being applied anteriorly. In the latter stage, to aid resolution, after the temperature has become normal, I use the rapidly alternating hot and cold application to the chest, cold mitten friction, and light massage as tonic measures to hasten the reparatory process.

During the treatment, the patient is kept on a mild liquid diet, and if the enemas are not sufficient to clear the bowels from any clogging that may have been present in the early stage of the disease, I give one or two doses of castor oil. Other than this, no medicine is used. With this routine of treatment we have never lost a case of primary pneumonia. A partial report of the following cases will give a clearer idea of the application of the treatment:

Miss F. A., aged ten, came home from school in the afternoon, taken with a severe chill, following which the temperature reached 105, with a pulse of 130, respiration 35. Physical signs were not well marked. The patient was given the initial treatment as above described. Within two days the characteristic physical signs of lobar pneumonia were well marked in lower lobes of both lungs. The pneumonia ran a characteristic course, passing the crisis of the disease in each lung separately, on the fifth and seventh days, at which time the high temperature, pulse and respiration dropped suddenly to nearly normal, the first time only remaining there a few hours, but after the second crisis they remained normal, and the child made a rapid recovery.

Mr. S. W., aged 73; patient feeble; pulse very irregular. Was called to the case February 3, 1900. Patient had been suffering, as he supposed, from a cold, for several days, and had taken treatment and cough medicine, of home prescription. Examination of the chest revealed bronchial pneumonia, affecting the right lung. The age and feebleness of the patient complicated the disease. The accompanying chart will give an idea of the results obtained by the



FULL LINES. TEMPERATURE ——————
DOTTED LINES. PULSE .....
DASH LINES, RESPIRATION - - - - - - - -

treatment. During the first two days no extreme cold was used, on account of the feebleness of the patient; but as no progress was made, the treatment was changed and thorough application of the hot and cold, using water at 35° F. was made every two hours. The marked improvement in respiration, pulse and temperature, are clearly indicated by the chart. After the second day, the application of the cold seemed to lose its control over the disease, and temperature and pulse returned, at which time we again applied poultice, giving hot and cold applications three times a day. Favorable results followed, and the temperature gradually returned to normal, and patient made good recovery. The rise in pulse and respiration on the eighth and ninth days was due to cough and free expectoration during resolution, which was indicative of the feeble condition of the patient. I report this case by chart because it is quite characteristic of a number of cases. The cold application when intelligently applied, will, in the average case, accomplish a great deal towards abating the symptoms, but one should guard against the applications being too frequent or too long continued, as they may, especially in the feeble patient, or one having

organic heart trouble, lose their tonic and antipyretic effect, and a period of depression with exaserbation of the symptoms may follow. But when this is watched closely, none of these deleterious effects need occur, and the good results obtained by the cold will become permanent.

The following case was simply acute congestion of the lungs, with extremely difficult respiration. Miss M. D. Was called to the case at 2 a. m., March 5, 1902. Found patient suffering with severe dyspnea, and incessant cough, and perspiring freely. Gave history of having suffered pain in left chest for some days. The evening before, the pain became intense, the cough developed, and shortness of breath extreme. Respiration, 30; pulse, 120; temperature, 102. Examination of the chest revealed coarse rales throughout both lungs, more marked on right side. At the bottom of the left lung there was impaired resonance on percussion, and partial obliteration of respirating murmur. The patient was given a hot foot-bath, with hot water to drink, thorough fomentations were applied over the chest, and hot bag to the spine. The cold applications were not well borne in this case, as they would immediately increase the oppressed breathing when applied. This may have been due to a very slight mitral murmur that was present. The hot applications were continued steadily for eight hours. At the end of that time the breathing was relieved and the cough checked. Menthol compresses were then applied, and the fomentations repeated every two hours. At the end of twenty-four hours the temperature was normal, the rales had largely cleared away, with the exception of the lower part of the left lung. This portion of the lung cleared entirely by the end of three days' treatment.

METHODS OF APPLYING ABOVE TREATMENT.

Full Body Pack—Spread comforter over the side of the bed, or preferably on cot beside the bed; spread blanket over this, and upon it unfold the blanket that has been wrung out of boiling water; as soon as the bare arm can be borne upon the blanket, have patient lie quickly in the center of it with arms close to the body; wrap one-half of blanket over body, then the other half; fold over the dry blanket that is underneath, also the comforter. The hot blanket should be of sufficient length to fold in well over the shoulders, and about the neck. Also wrap about the feet, so as to keep them warm, and exclude the air. The quicker the patient can be wrapped up so as to exclude the air, the less discomfort he will feel from the heat. Leave patient in the pack twenty or thirty minutes, or longer if favorable effects are produced. Should the patient not perspire, and the temperature have a tendency to rise, and the tendency to chill has ceased, sponge the body briskily with cold water before the patient is replaced in bed. In giving the sponge, expose only a small portion of the body at a time, and see that there is no tendency to chill.

Leg Pack—Have blanket wrung out of hot water the same as for the full pack. Then turn the bed clothing away from the extremities, spread dry blanket beneath them, and unfold the hot blanket upon it. Wrap first the hot blanket, then the dry one, about the limbs, and replace the bed clothing. Each leg may be wrapped separately with more comfort to the patient. The hot blanket should be wrung sufficiently dry so that it cannot drip and wet the bed.

Fomentations—Take large flannel cloth, preferably one-quarter of a single blanket; fold to a convenient shape for applying over the affected part; then dip in boiling water, leaving ends dry, so that by them the cloth can be wrung sufficiently dry that water cannot drip from it. Wrap this in another fomentation, leaving one thickness of dry cloth beneath the hot one, and apply to the affected part. Change every two or three minutes, or as often as the cloths lose their excessive heat.

Cold Compress—Take cotton or cheese cloth sufficiently large to fold into several thicknesses, and have an area that will cover one-half of the chest, extending from the apex to the base of lung, and from the sternum to the spine. Dip this in water at 60° F., drain sufficiently dry that it will not drip, and apply to the chest, covering with a dry flannel cloth, or preferably oiled silk. Change the compress every fifteen minutes, or as often as it becomes warm. In some cases better effects will be obtained by having the compress colder, being wrung out of water at 50°, 40° or even 32° F.

Ice Compress—Take four ice-bags filled with chipped ice, tie securely, and wrap in a Turkish towel, with the bags about three inches apart, and one or two thicknesses of towel beneath them. Apply to the affected part.

Cold Mitten Friction—Make mitten of Turkish cloth to fit the hand. Have the water as cold as can be borne well by the patient, and have a good reaction obtained by the friction; temperature will vary from 80° to 50° F. Dip hand, with mit applied, in water, and shake off the excess. Expose a small portion of the body; rub briskly with the cold mitten till some redness of skin appears and part feels warm. Keep surrounding clothing covered with Turkish towels so that dripping water will not dampen it. Dry with a Turkish towel. Cover the part, and repeat operation on other portions of the body.

Hot and Cold Applications—Use ordinary fomentations as above described, and about every half minute lift fomentation cloth and rub the chest for two or three seconds with a smooth piece of ice.

Bowel Irrigation for Reducing Temperature—Take water at 60° or 50° F. and put into it 30 grains sodium chloride to the pint. By rectal tube and fountain syringe inject one to three pints of this solution. If retained, leave in for twenty minutes, and then allow patient to pass the solution, and repeat the injection. Have the patient

retain the last solution, using a less quantity if necessary, so that it may become absorbed.

DISCUSSION.

Dr. Geo. L. Cole, Los Angeles—I feel much gratified by this paper. It is rather interesting at this time, when the profession is reaching out for new remedies, to have brought to our notice something which is easily applied, something which is not new, except the application, and something which has stood the test of time. I think that instead of devoting so much time to grasping new remedies, if we utilize this we will do better. For instance, so many new hypnotics have been placed before us; and I am sure that none of the hypnotics are equal to chloral hydrate. While there is no exception to be taken to anything that was said, there are one or two points that might be emphasized in regard to what the doctor said about the short and long application of cold and heat. In the short application of cold the reaction is quick, and is continued by the long application of the cold. What he said, furthermore, about the study of this subject, we should remember that here is something we are not as familiar with as we should be. He says the novice may think it is easy, but if he does not understand it he will not get the results.

If we do not understand the treatment we will not get the results we expect. The question of cold applications acting as a tonic cannot be better exemplified than in the Brandt treatment of typhoid fever. We have all seen, under this treatment, how the circulation is benefited, the temperature comes down, the days go by, and what was considered a critical case goes on to recovery. Many of our patients become disgusted with drugs; hence it is we have so much attention paid in these days to mental science, osteopathy, etc. The use of cold water, especially in the institutions where hydropathy is used, where the patient comes in contact with a room fitted up as in a sanatorium, where there are various methods of using it, as the bath, jet and spray, it has a psychic effect; and in many cases along the line of neurasthenia they are benefited, very much from the psychological effect, and it is proper for us to take account of this line of treatment and the effect. If I was to criticise any remark made, it was the suggestion that the authority let drop—I am not quite sure that I understood correctly, but I gained the impression—that if water was properly used we might do away with venesection. I can't believe this. The longer I practice medicine the more I am convinced that there are cases where venesection should be employed. If I have ever saved human life, I believe it was in two cases where I promptly drew 25 to 30 ounces of blood; and I believe in pneumonia, in strong plethoric persons, that in the beginning of the disease venesection will accomplish something that nothing else will. I believe also that there are cases of cardiac lesions in which if properly applied and promptly used at the proper time life may be saved, or the critical period tided over in these valvular lesions. I had one patient in whom I did this, and the patient had two years of good health, and I believe if the prompt venesection had not been used the patient would have died. In apoplectic attacks, or in some cases where the symptoms positively point to apoplexy, I do not think we can replace venesection by hydrotherapy.

Dr. H. N. Rucker of Merced—I would like to ask Dr. Hare one question for information. I would like to know if he has had any experience with it and would recommend a cold compress in surgical shock; for instance, would his idea be that the heart action would be increased by the cold? I ask this question because I have had some experience in applying very hot applications over the heart in extreme surgical shock, and where the pulse was not perceptible. I never used the cold, because I feared the effects would be disastrous, but I have seen good effects from the heat.

Dr. Hare—I am glad the gentleman asked the question referring to cold in shock. It is a question closely allied to the last reader as in pneumonia. The only effect we get from the cold is through the reaction or the reflex manifestations. When we apply cold to an area, we get reflex action from the cold immediately. That reflex action comes from the impression of the cold on the nerve centers in the skin. If we leave it on for a while, we get numbing of the skin. If Dr. Sanderson, who read the paper on pneumonia, continues the cold long enough to get numbing of the body, he will get just what we don't want in the surgical shock, a condition of partial numbing of sensibility. He took a cold compress for a short time and got bad results. We must get a reaction of sensibility. When we don't get the reaction, we aggravate it. If it is cold enough and for a short period, it will be all right. The doctor's suggestion to the use of heat is a good one, and we get good results from the short applications of heat, and then follow it by the cold. I wish this subject might be thought about and discussed oftener in the medical associations. The use of hydrotherapy is relegated by the ignorant, and I don't hesitate for a moment to be a defender of its scientific value. It has a basis that is well founded. I wish to call attention to another point in the use of hydrotherapy in typhoid fever. We are apt to make a mistake when the skin is cold; the blood supply to the skin is limited, and the internal organs are engorged. A heat application for ten seconds will bring the blood to the surface, and then we apply the cold and we get a better reaction. The use of friction has been suggested, and it is a most excellent feature, and is essential. We can't get the par excellence results without it. The friction should be extremely superficial and rapid. The heart brings the blood to the surface and then we can use the cold applications. I called attention to another point, that is, cold not only reduces the fever, but it does more. It is the significant point of the treatment. The cold stimulates the vital processes of the body, and increases the alexins in the body. The heat increases the defenses and is an effort on the part of nature to do away with the toxins. I don't think we get the greatest results from the bath, as it does not control the nerve centers. I want to thank the Society for the kindness with which they received this report. Hydrotherapy should be studied from a more scientific standpoint in order to get the benefits. I want to say that I intended to suggest the idea that by the scientific use of heat and cold, blood letting may be avoided. Any part of the body may be depleted of blood by taking it to the skin, and promiscuous bloodletting may be obviated by the agency of heat and cold.

SPINAL ANESTHESIA WITH TROPA-COCAINE IN GENITO-URINARY SURGERY.*

By M. KROTOSZYNER, M. D., San Francisco.

AS early as 1885 in the first publication upon spinal anesthesia that appeared in medical literature, Corning (1) says: "Whether the method will ever find an application as a substi-

* Read before the Medical Society of the State of California, at the annual meeting, held in San Francisco, April 14 to 17, 1902.